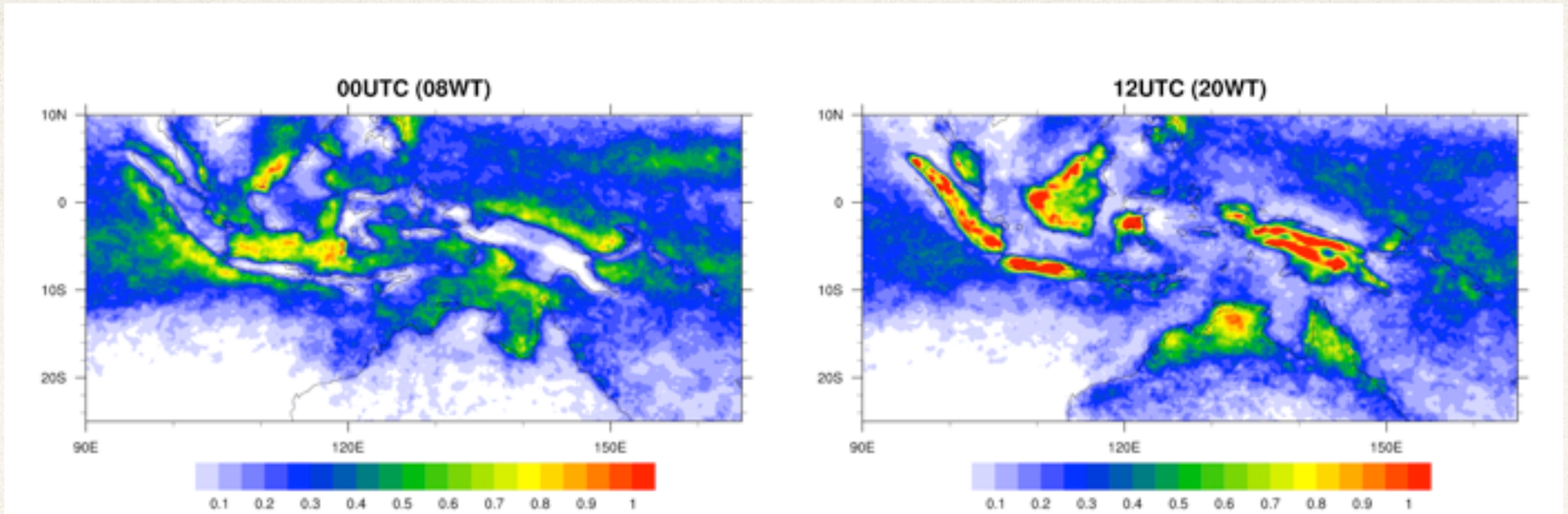
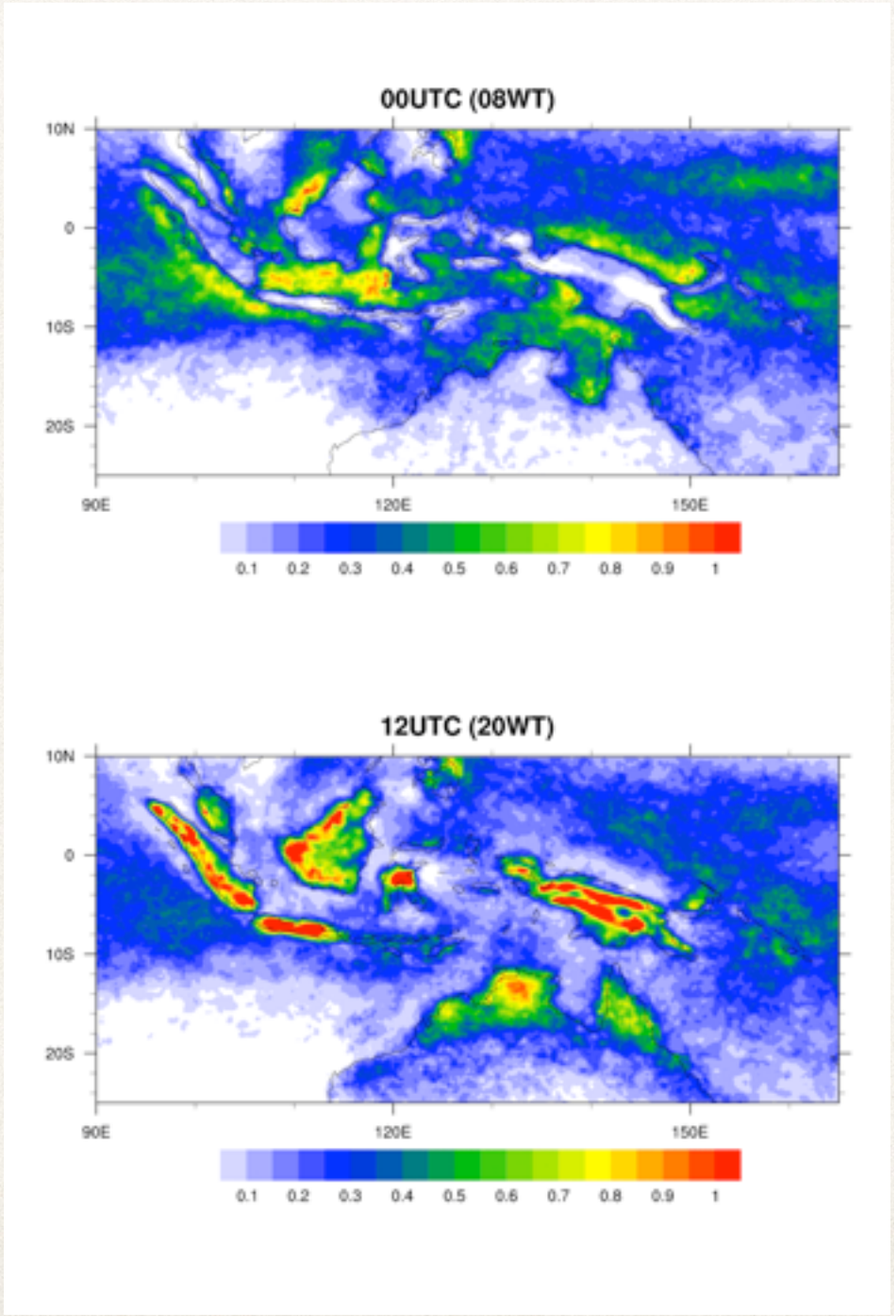


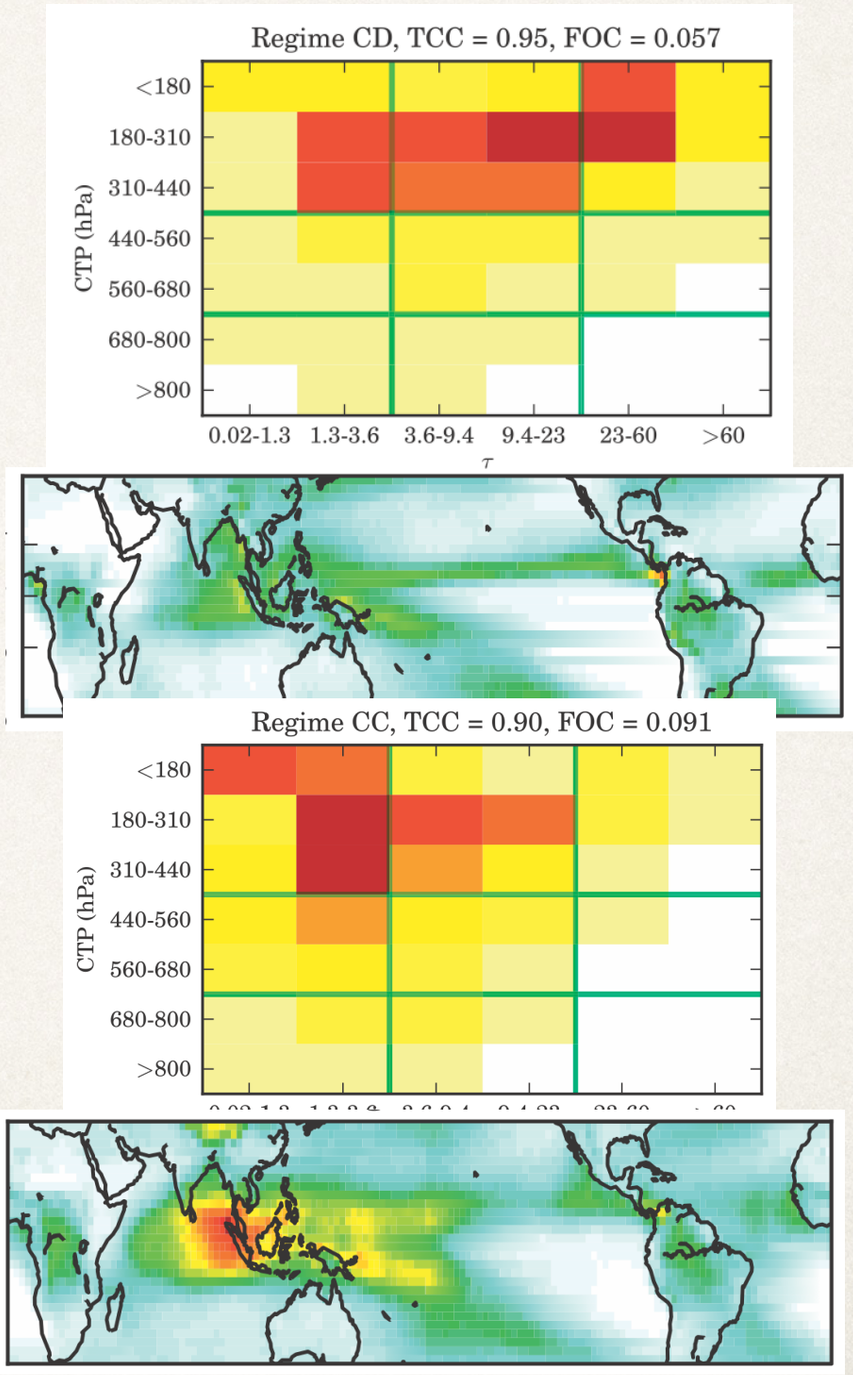
Data - and other - needs for model evaluation of convection

Christian Jakob
ARC Centre of Excellence for Climate System Science, School of Mathematical Sciences, Monash University, Melbourne, Australia

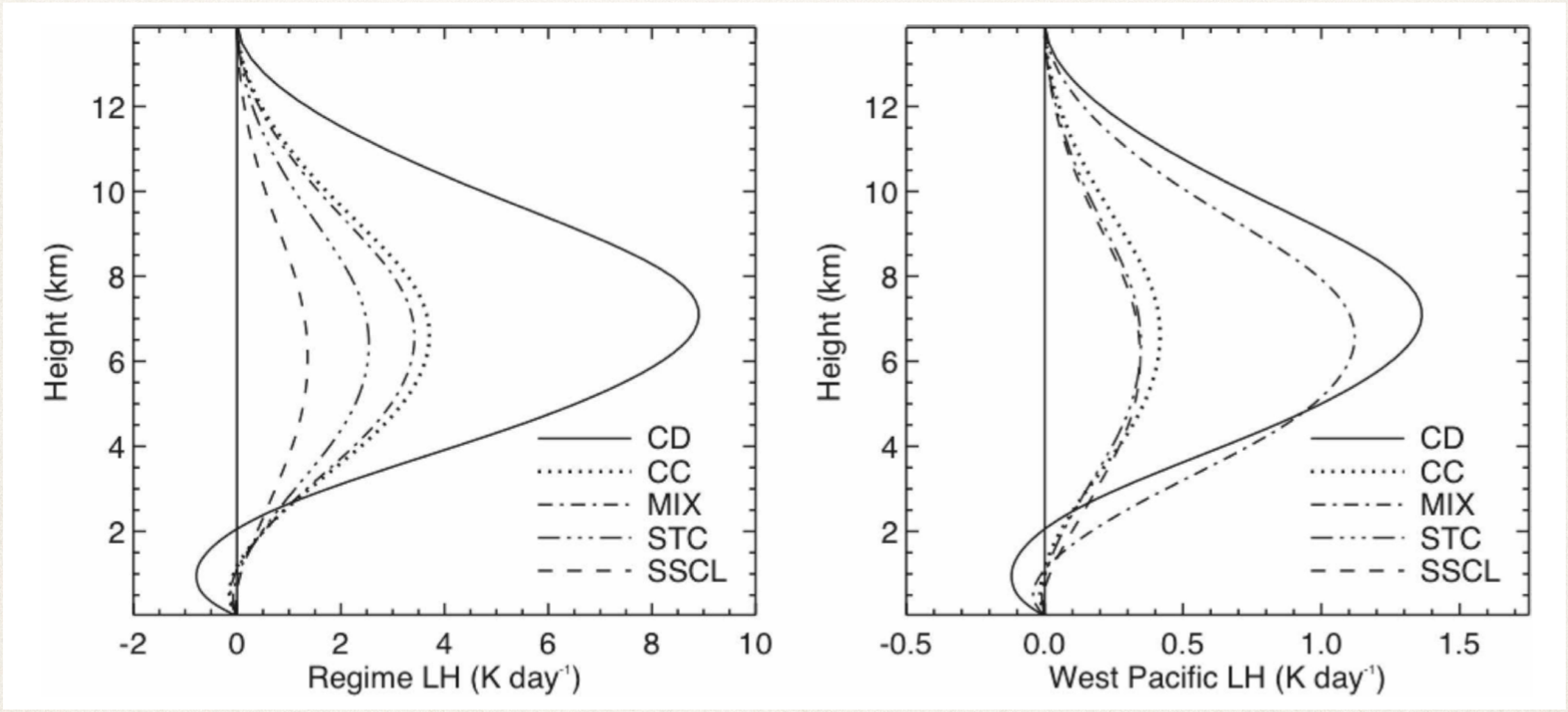
29 April 2014

Observables of convection are clouds and precipitation …





… which can then be linked to heating structures.



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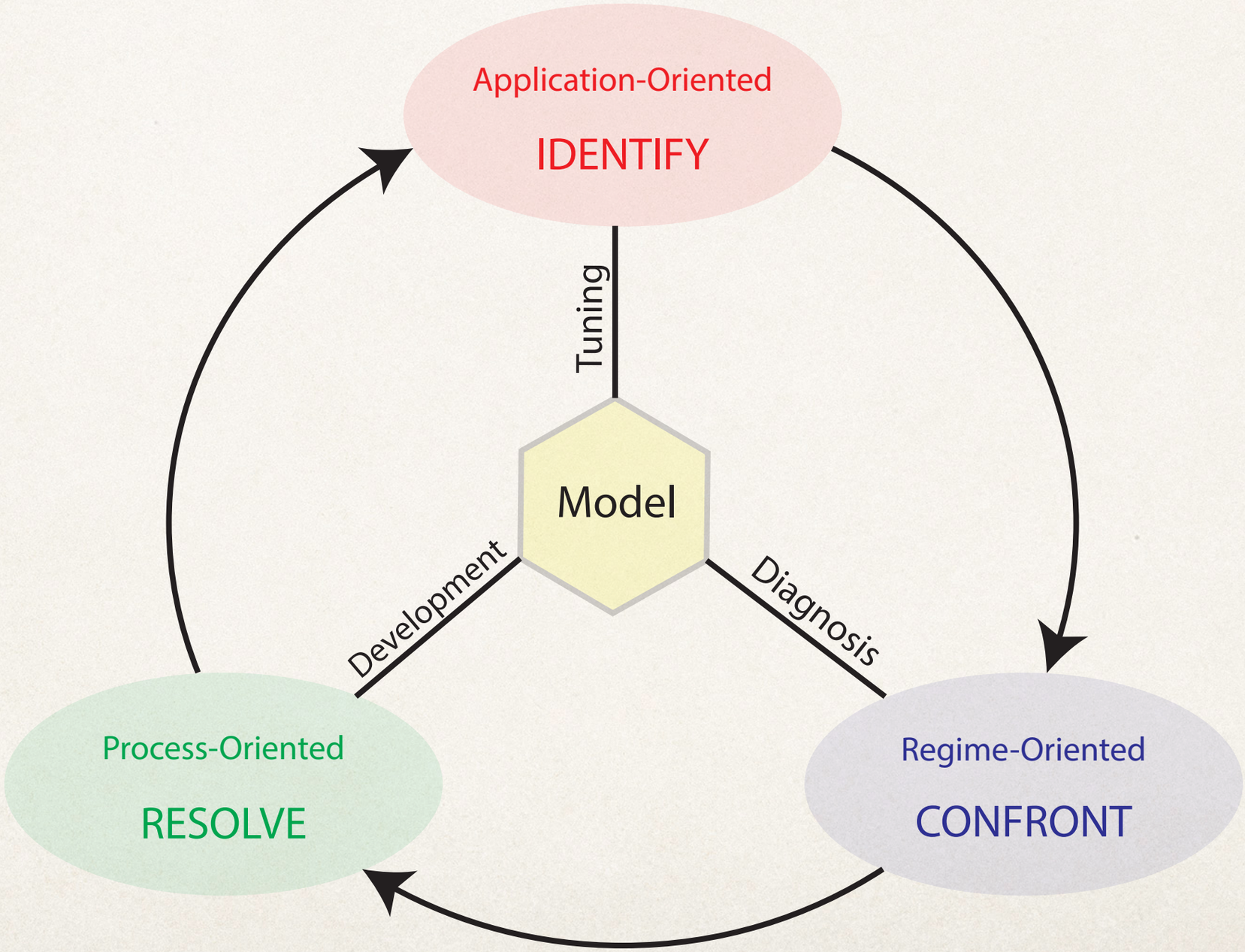
Model evaluation and development



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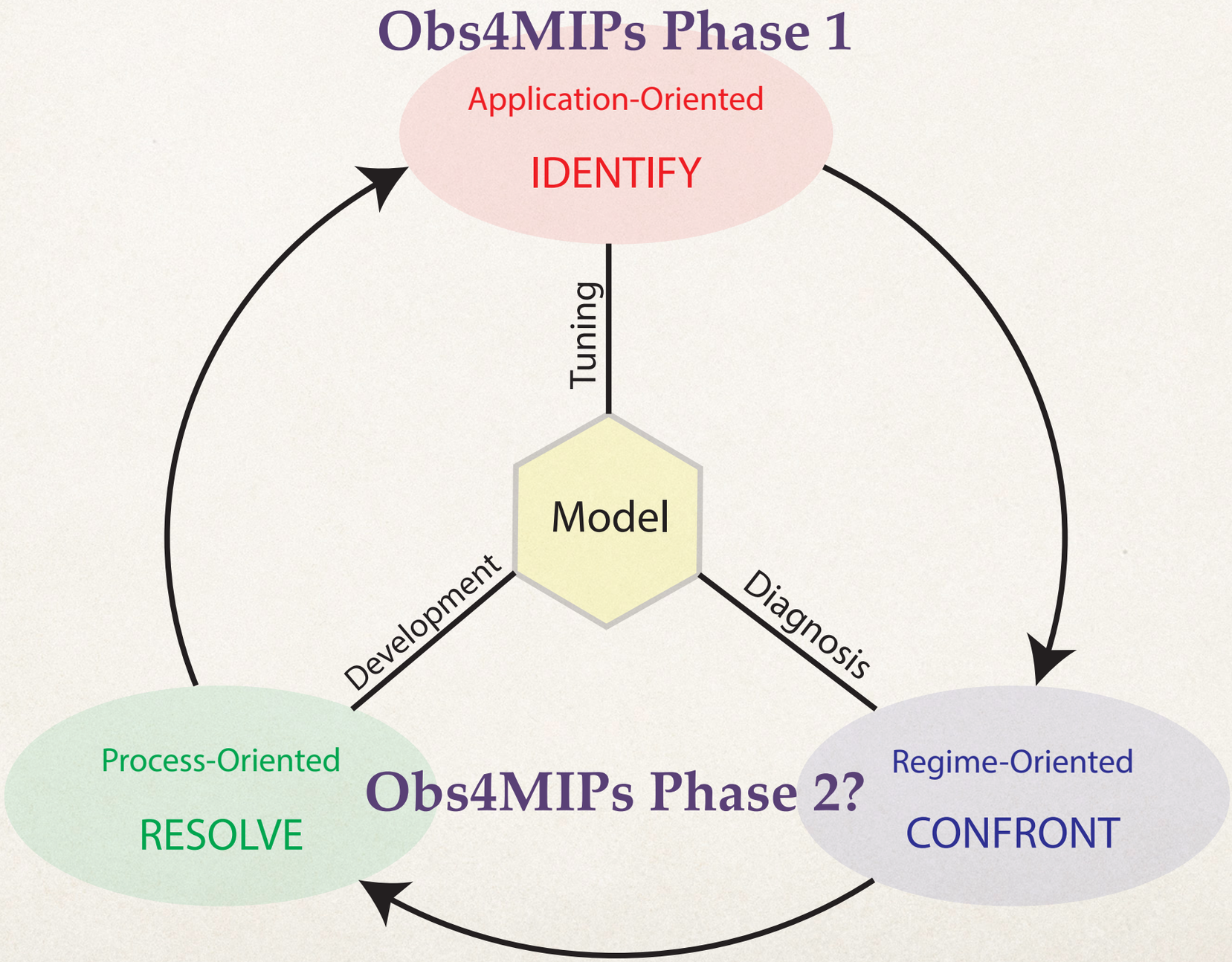
Model evaluation and development - Role of Obs4MIPs



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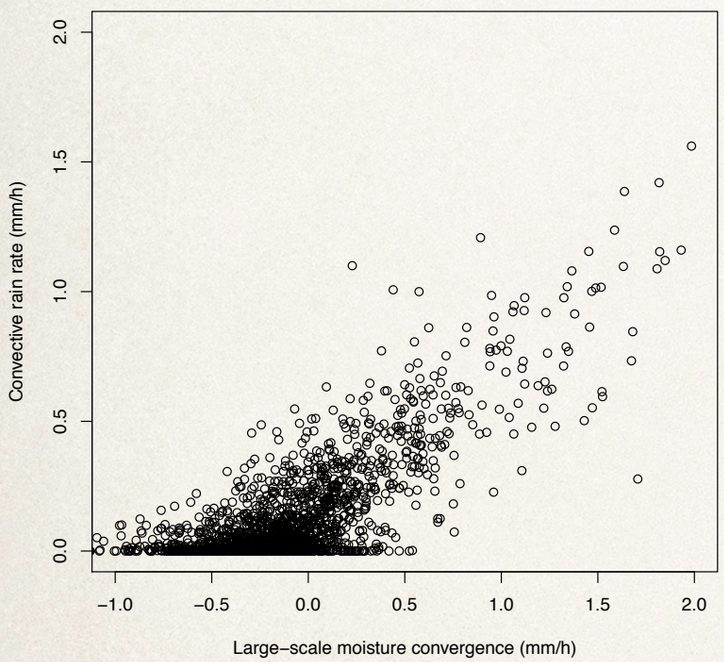
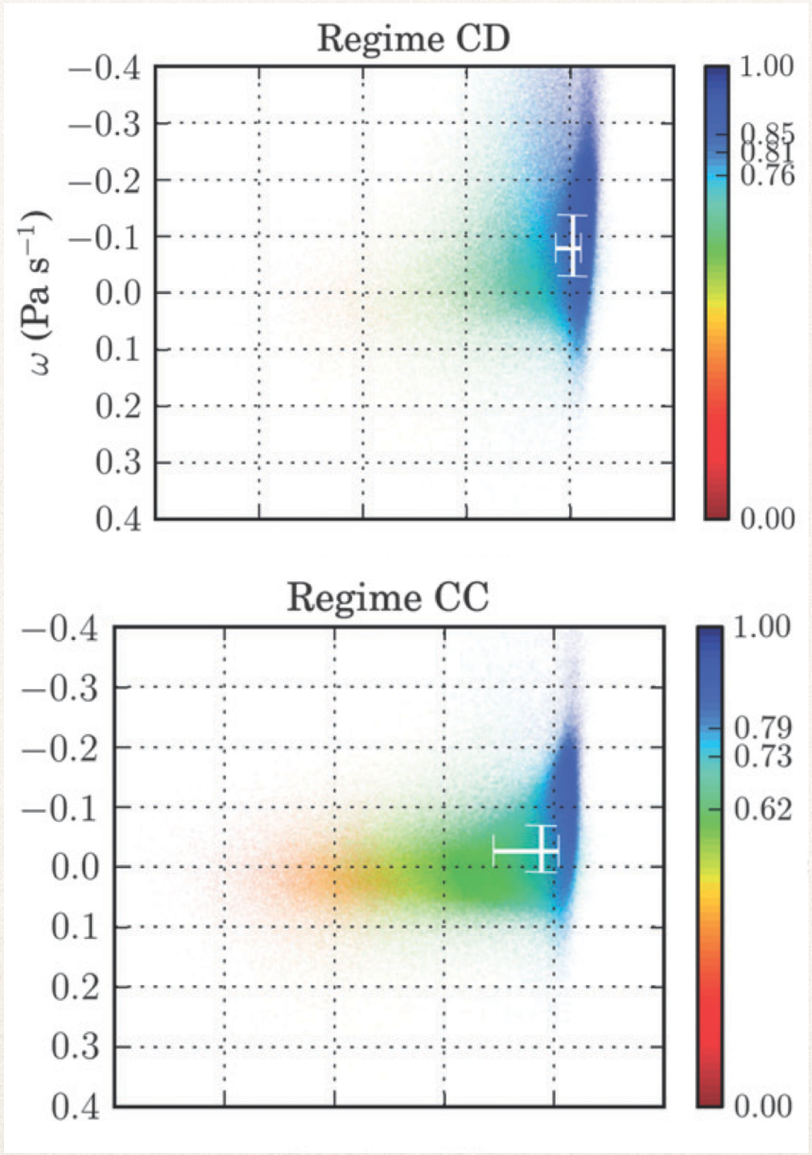
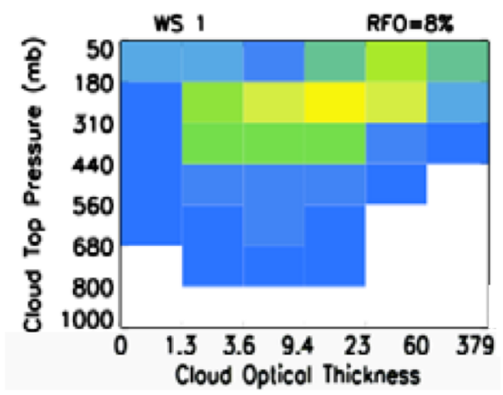
This requires to test relationships between variables as well as observed climate signals

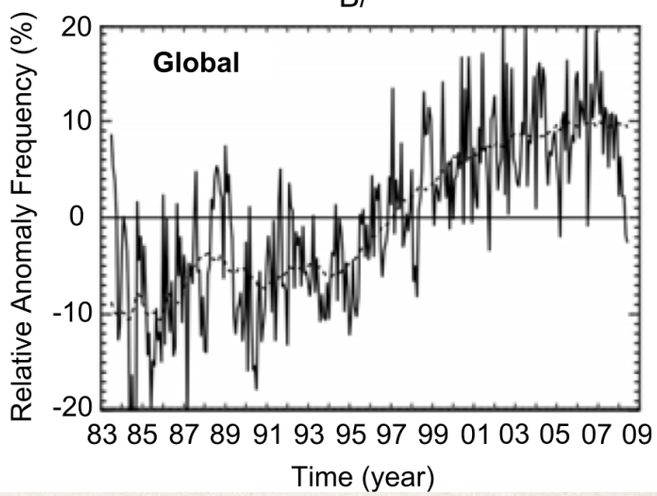




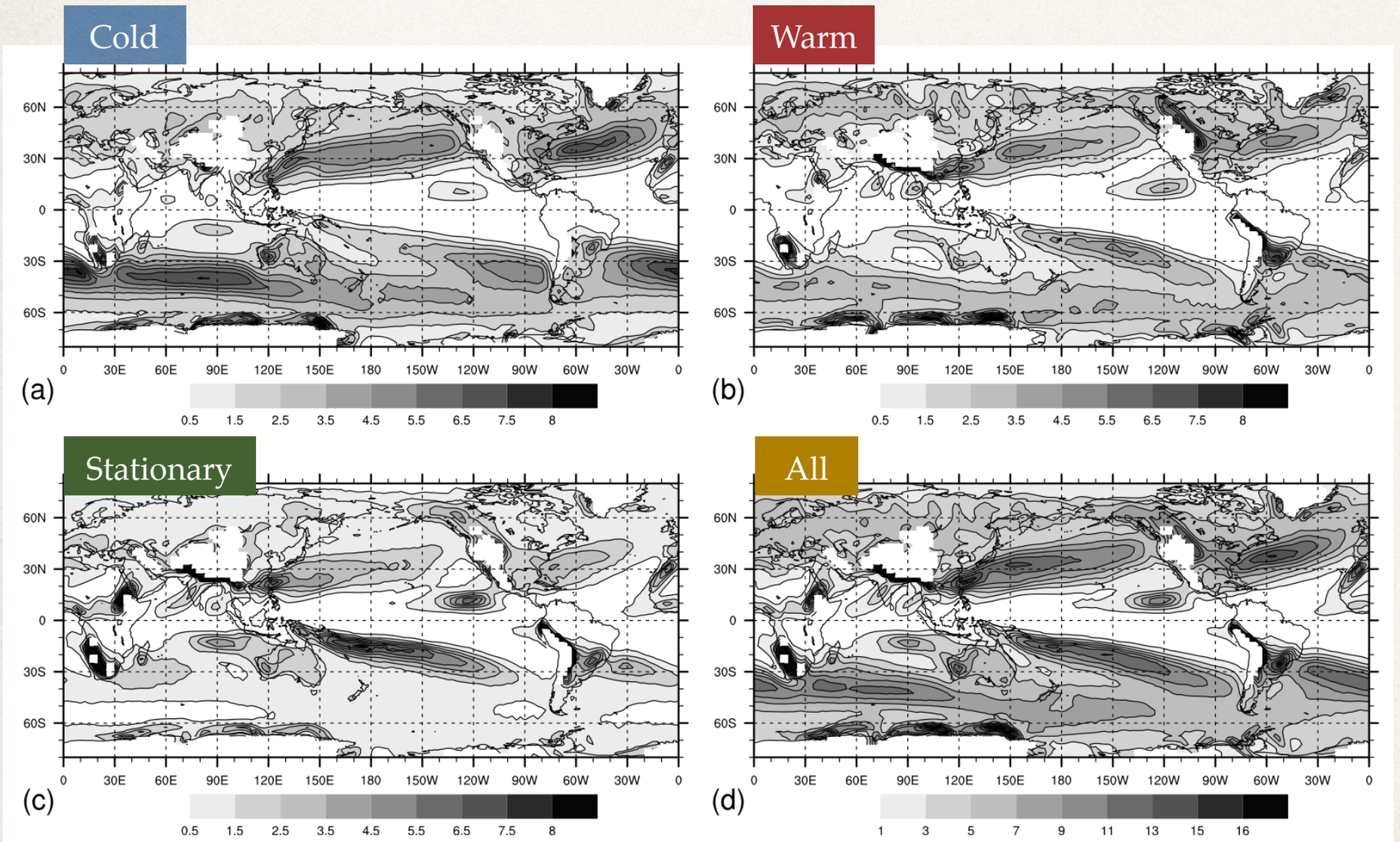
A/



B/



It also requires to consider including derived data sets



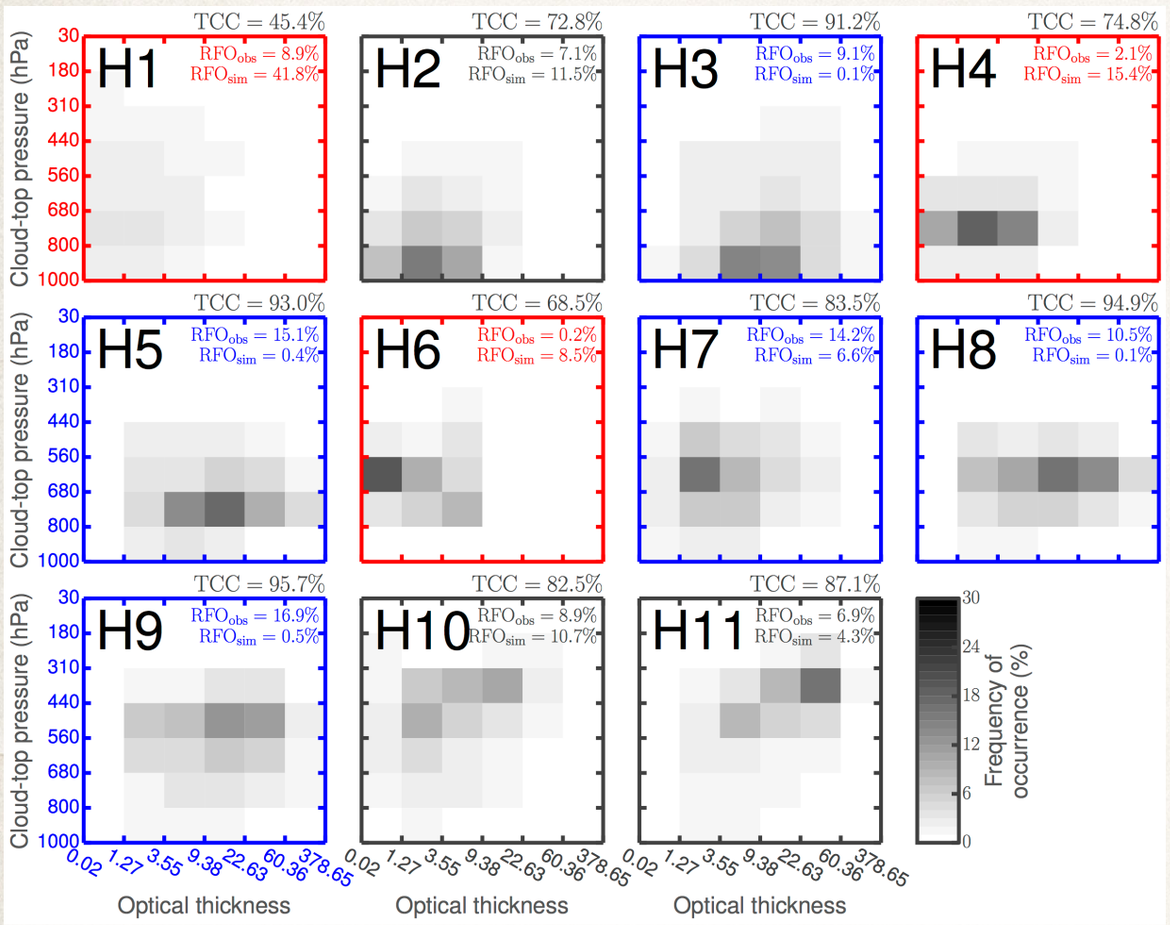
Frequency of occurrence of fronts

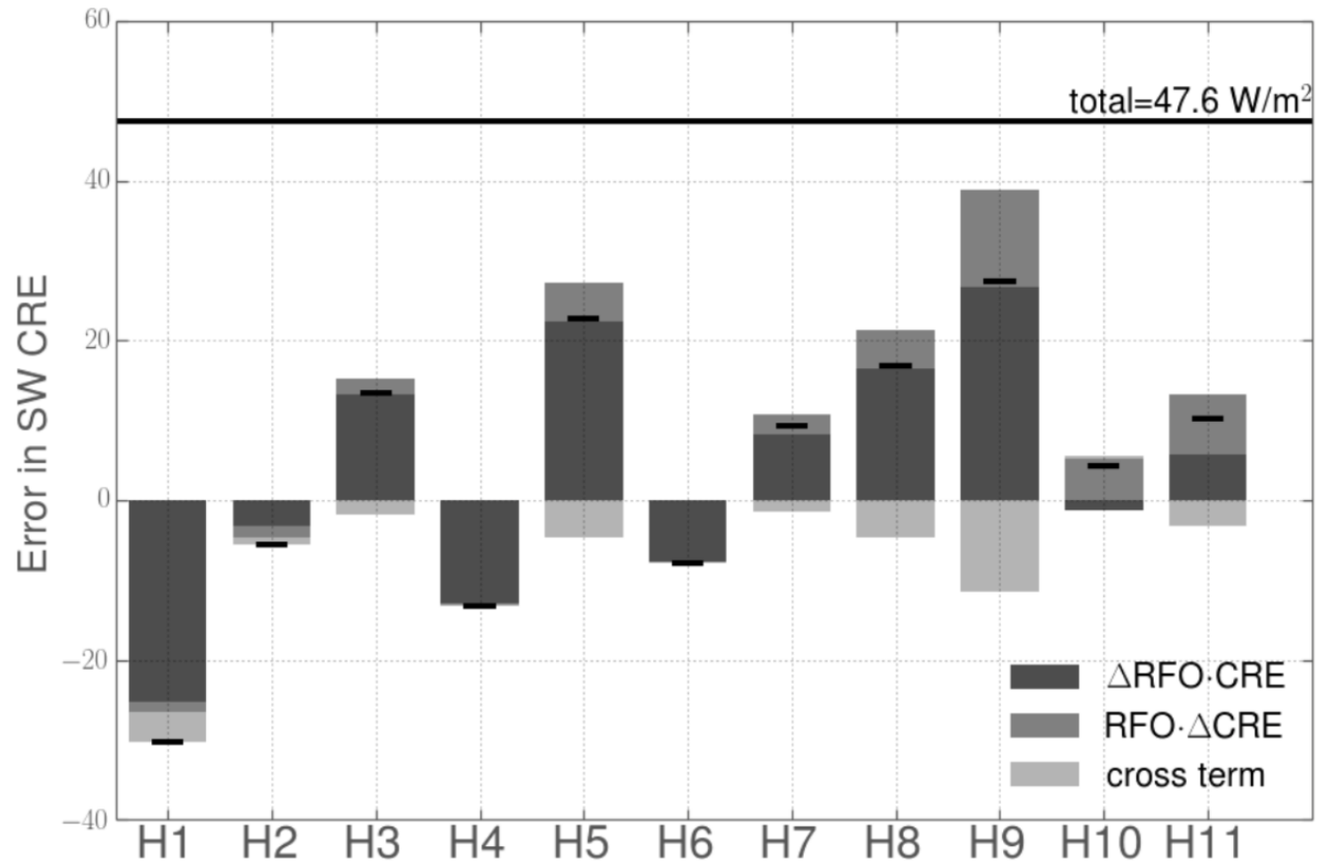
Berry et al., GRL 2011

Consequences for Obs4MIPs

- Multiple data sets at the same space and time resolution
- High time resolution, including daily and sub-daily
- Derived data products that are accepted and used by the community, e.g., convection-stratiform split of rainfall, ISCCP Cloud/Weather States
- Co-located (in space and time) observations of large and small scales
- Strong connections to analyses and re-analyses
- And then there is a need for diagnostic tools

This also requires more advanced diagnostic techniques





$$\Delta CRE = \sum_{r=1}^{11} RFO_r \Delta CRE_r + \sum_{r=1}^{11} CRE_r \Delta RFO_r + \sum_{r=1}^{11} \Delta RFO_r \Delta CRE_r$$

Should we design an effort around the sharing of diagnostic tools under the *4MIPs umbrella? -> Diag4MIPS

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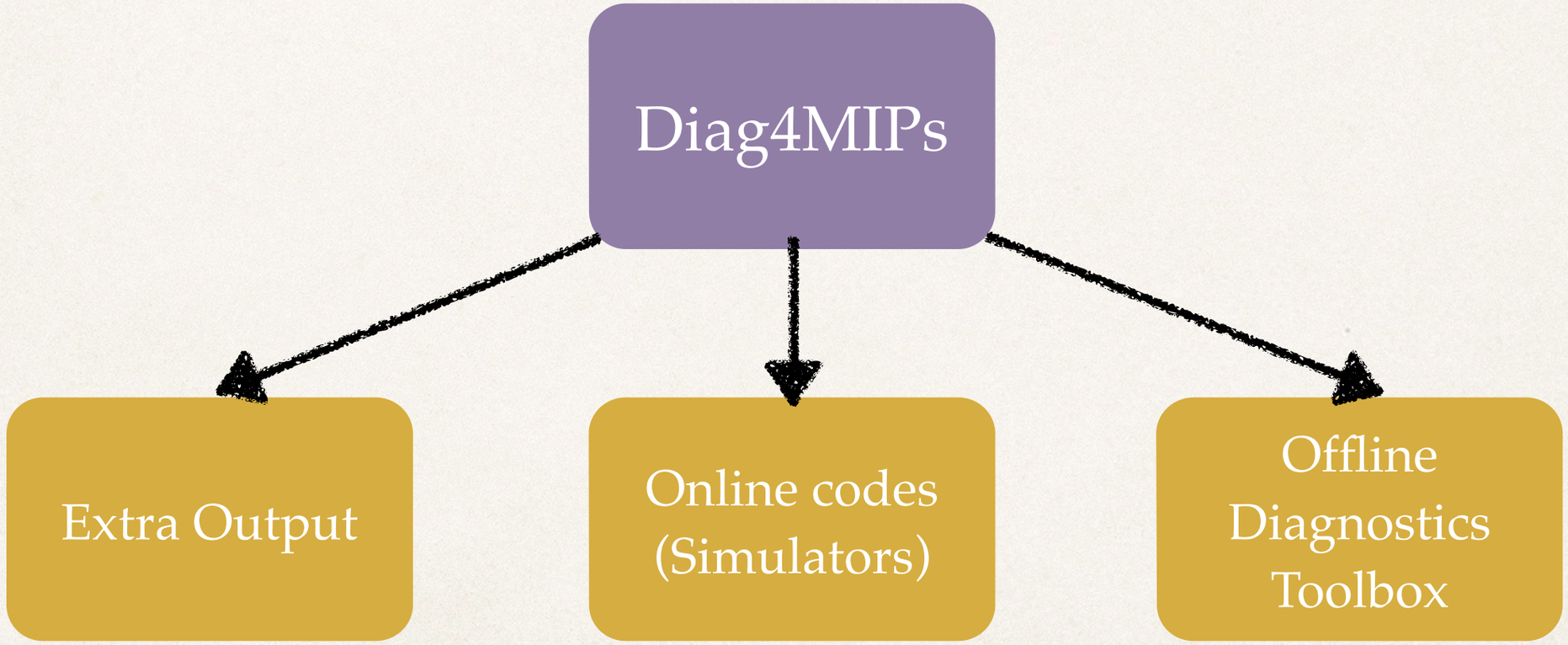
It also requires more advanced diagnostic techniques

Should we design an effort around the sharing of diagnostic tools under the *4MIPs umbrella? -> Diag4MIPS



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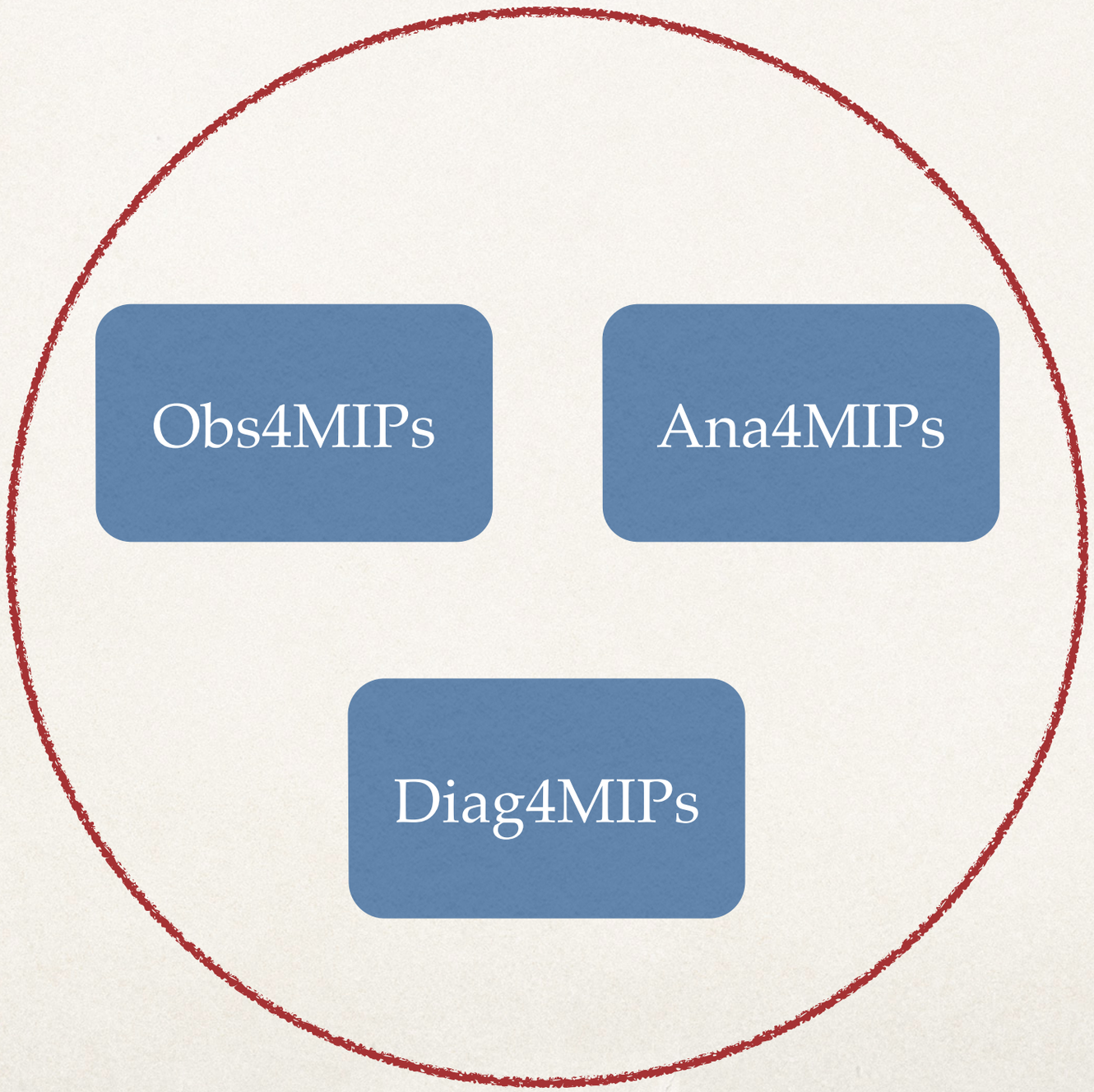
There are even broader issues to consider - An Eval4MIPs initiative?



Eval4MIPs

or just

CMEP1

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Lets discuss this further this week!